NS1.13:Sc1 2/953-77

COMPLETED
ORIGINAL

A listing of PUBLICATIONS

1953-77

DIVISION OF SCIENCE RESOURCES STUDIES

NATIONAL SCIENCE FOUNDATION
WASHINGTON, D.C. 20550

25

CONTENTS

	Page
General Notes	iii
National Studies	1
Economic and Social Aspects of Science and Technology	1
R&D Funds and Manpower	1
Manpower Studies	1
General	1
Selected Fields	2
Immigration	2
Science Education Studies	2
Studies at the Sectoral Level	4
Government Studies	4
Federal Government	4
State and Local Government	4
Organization	4
Industrial Studies	5
Universities and Colleges Studies	5
Nonprofit Institutions Studies	6
Detailed Statistical Tables	7
Foreign Studies	7
Listing of Bulletins:	
Science Resources Studies Highlights	8
Reviews of Data on Science Resources	9
Reviews of Data on Research & Development	10
Scientific Manpower Bulletin	11
Publications Resulting From Total or Partial Support of the Division of Science Resources Studies, NSF	12

Blank
Page

GENERAL NOTES

- This booklet lists all the science resources reports published by the National Science Foundation's **Division of Science Resources Studies** and those reports published by this Division under its former designations: Office of Economic and Manpower Studies, Office of Economic and Statistical Studies, Office of Special Studies, and Program Analysis Office. The list includes the reports of the Division's regular statistical surveys as well as those of special nonrecurring analyses and studies. Most of the papers and reports published by outside researchers working on specific projects under grant or contract to the Division are also included.

- The purpose of this booklet is to provide a full, accurate list of Division of Science Resources Studies publications which can serve as a bibliographic aid and reference for persons in government, industry, universities, other nonprofit organizations, the media, and libraries.

- The four bulletin series published throughout the years: *Reviews of Data on Research & Development, Scientific Manpower Bulletin, Reviews of Data on Science Resources, and Science Resources Studies Highlights* are each listed chronologically by number of bulletin or NSF number.

- The publications listed span two decades: for that reason, many are out of print. However, accurate reference to such reports should enable interested persons to locate them in many libraries—especially those serving as Government depositories.

- Detailed statistics from some of the annual surveys are published separately; this method provides statistical information prior to publication of the full analytical report (see p. 7).

- All current publications may be obtained from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402; except for *Science Resources Studies Highlights* and *Detailed Statistical Tables* which are obtainable from Central Processing Section, National Science Foundation, Washington, D.C. 20550.

- Since NSF publications are in the public domain, they can be freely quoted. A citation to the relevant report would be appropriate, however, and the following forms for references are suggested:

> National Science Foundation, *Research and Development in Industry, 1971* (NSF 73-305) (Washington, D.C. 20402: Supt. of Documents, U.S. Government Printing Office).
>
> National Science Foundation, *Science Resources Studies Highlights*, "Industrial Research and Development Approaches $20 Billion in 1972" (NSF 73-317) (Washington, D.C. 20550).

NATIONAL STUDIES

Economic and Social Aspects of Science and Technology

Papers and Proceedings of a Colloquium on Research and Development and Economic Growth/Productivity 72-303

Successful Industrial Innovations 69-17

Proceedings of a Conference on Technology Transfer and Innovation 67-5

*Decision-Making on Research and Development in the Business Firm 64-6

*Inquiries into Industrial Research and Development and Innovation 63-12

*Innovation in Individual Firms 62-16

*Diffusion of Technological Change 61-52

Proceedings of a Conference on Academic and Industrial Basic Research 61-39

Bibliography on the Economic and Social Implications of Scientific Research and Development. A Selected and Annotated Edition 59-41

Methodology of Statistics on Research and Development 59-36

Proceedings of a Conference on Research and Development and Its Impact on the Economy 58-36

Current Projects on Economic and Social Implications of Science and Technology

1965 66-21
1964 65-16
1963 64-10
1962 63-8
1961 62-4
1960 60-79
1959 59-51

Digests of R&D Organization and Management Studies ..... —

Investing in Scientific Progress 61-27

R&D Funds and Manpower

1985 R&D Funding Projections 76-314

National Patterns of R&D Resources. Funds and Manpower in the United States

** 1953-77 77-310
** 1953-76 76-310
1953-75 75-307
1953-74 74-304
1953-73 73-303
1953-72 72-300
1953-71 70-46
1953-70 69-30
1953-68 67-7

*Research Funds Used in the Nation's Scientific Endeavor, 1963 65-11

*National Trends in R&D Funds, 1953–62 63-40

*Trends in Funds and Personnel for Research and Development, 1953-61 62-9

*Research and Development and the Gross National Product 61-9

*Funds for Performance of Basic Research in the United States, 1953-58 60-43

*Funds for Research and Development in the United States, 1953-59 59-65

*Research and Development and Economic Growth 59-17

*Funds for Basic Research in the United States, 1953 57-22

*Expenditures for Research and Development in the United States, 1953 56-28

*Scientists and Engineers in Research and Development, 1958 61-49

*Scientists and Engineers in Research and Development, 1954 58-9

**A Price Index for Deflation of Academic R&D Expenditures 72-310

Experimental Input Price Indexes for Research and Development, Fiscal Years 1961-65 70-7

Manpower Studies

GENERAL

Women and Minorities in Science and Engineering 77-304

**U.S. Scientists and Engineers, 1974 76-329

Characteristics of the National Sample of Scientists and Engineers, 1974.

**Part I. Demographic and Educational 75-333
**Part 2. Employment 76-323
Part 3. Geographic 76-330

The 1972 Scientist and Engineer Population Redefined.

**Volume 1. Demographic, Educational, and Professional Characteristics 75-313
‡**Volume 2. Labor Force and Employment Characteristics 75-327

Characteristics of Doctoral Scientists and Engineers in the United States

**1975 77-309
‡**1973 75-312

*Doctoral Scientists and Engineers in Private Industry, 1973 76-302

*Work Activities of Employed Doctoral Scientists and Engineers in the U.S. Labor Force, July 1973 75-310

*Published in bulletin form. See pp. 8-11 for full listing of the four SRS bulletin series. Each series listed chronologically by NSF number.

**Indicates preliminary data were released in one of the four SRS bulletin series listed on pp. 8-11.

‡Indicates a separate volume of detailed statistical tables. See p. 7 for a listing.

American Science Manpower. A Report of the National Register of Scientific and Technical Personnel
- **1970 71-45
- **1960 69-38
- **1966 68-7
- **1964 66-29
- **1962 64-16
- **1960 62-43
- **1956-58 61-45
- **1954-1955 59-39

The National Register of Scientific and Technical Personnel 61-46

Unemployment Rates and Employment Characteristics for Scientists and Engineers, 1971 72-307

Scientific Human Resources: Profiles and Issues 72-304

Projections of Science and Engineering Doctorate Supply and Utilization, 1980 and 1985 75-301

1969 & 1980 Science & Engineering Doctorate Supply & Utilization 71-20

Science & Engineering Doctorate Supply & Utilization, 1968-80 69-37

Employment of Scientists and Engineers in the United States, 1950-66 68-30

Scientific and Technical Manpower Resources. Summary Information on Employment, Characteristics, Supply, and Training 64-28

Scientific Personnel Resources. A Summary of Data on Supply, Utilization, and Training of Scientists and Engineers ..... —

Scientists, Engineers, and Technicians in the 1960's: Requirements and Supply 63-34

Long-Range Demand for Scientific and Technical Personnel 61-65

Women in Scientific Careers 61-50

Brief Summary of Data on the Training of Scientists and Engineers in the United States 59-15

Trends in the Employment and Training of Scientists and Engineers 56-11

Scientific Manpower. Papers of the Conferences on Scientific Manpower
- 1962 63-31
- 1961 62-22
- 1960 61-34
- 1959 60-34
- 1958 59-37
- 1957 58-21
- 1956 57-23
- 1954 ..... —
- 1953 ..... —
- 1952 ..... —
- 1951 ..... —

SELECTED FIELDS

*Manpower Resources in Meteorology, 1951 ... —

*Manpower Resources in the Geophysical Sciences ..... —

*Manpower Resources in Mathematics, 1951 ... —

Manpower Resources in Mathematics ..... —

Manpower Resources in the Earth Sciences .... —

Manpower Resources in the Biological Sciences ..... —

Employment in Professional Mathematical Work in Industry and Government 62-12

IMMIGRATION

Immigrant Scientists and Engineers in the United States. A Study of Characteristics and Attitudes 73-302

Scientists, Engineers, and Physicians From Abroad
- *Fiscal Year 1973 74-302
- *Fiscal Year 1972 73-311
- **Trends Through Fiscal Year 1970 73-312
- *Fiscal Year 1968 69-36
- *Fiscal Years 1966 and 1967 69-10
- *Fiscal Year 1965 68-14

Scientists and Engineers From Abroad
- *1966-75 77-305
- 1962 and 1964 67-3
- *Fiscal Years 1962 and 1963 65-17

Scientific Manpower From Abroad. United States Scientists and Engineers of Foreign Birth and Training 62-24

*Immigration of Professional Workers to the United States, 1953-56 58-4

Science Education Studies

Projections of Degrees and Enrollment in Science and Engineering Fields to 1985 76-301

Graduate Science Education: Student Support and Postdoctorals
- ‡**Fall 1975 77-313
- ‡**Fall 1974 76-313
- ‡**Fall 1973 74-318
- **Fall 1972 73-315

Graduate Student Support and Manpower Resources in Graduate Science Education
- **Fall 1971 73-304
- **Fall 1970 71-27
- **Fall 1969 70-40
- †Fall 1965-Fall 1966 68-13

*The Federal Role in the Support of Graduate Science and Engineering Education 74-317

Continuing Education for R&D Careers 69-20

*Published in bulletin form. See pp. 8-11 for full listing of the four SRS bulletin series. Each series listed chronologically by NSF number.

**Indicates preliminary data were released in one of the four SRS bulletin series listed on pp. 8-11.

‡Indicates a separate volume of detailed statistical tables. See p. 7 for a listing.

†Data for 1961 published in NSF 69-34, *Support of Full-time Graduate Students in the Sciences, Fall 1967.*

*Baccalaureate Sources of Science and Engineering Manpower 69-4

Young and Senior Science and Engineering Faculty, 1974: Support, Research Participation, and Tenure 75-302

Support and Research Participation of Young and Senior Academic Staff, 1967 68-31

Two Years After the College Degree. Work and Further Study Patterns 63-26

Secondary School Science and Mathematics Teachers. Characteristics and Service Loads 63-10

Duration of Formal Education for High Ability Youth. A Study of Retention in the Educational System 61-36

Science Doctorates of 1958 and 1959. Their Numbers, Characteristics, and Employment 60-60

Statistical Handbook of Science Education 60-13

Graduate Student Enrollment and Support in American Universities and Colleges, 1954 57-17

Federal Support for Science Students in Higher Education, 1954 56-18

Education and Employment Specialization in 1952 of June 1951 College Graduates ..... —

*Exchange of Foreign and American Graduate Students in the Sciences, Engineering, and Other Fields 57-15

**Impact of Changes in Federal Science Funding Patterns on Academic Institutions, 1968-70 70-48

Summaries of Studies Concerning Scientific and Technical Manpower and Education

As of June 30, 1968 ..... —

As of June 1966 ..... —

As of June 1965 ..... —

*Changes in Graduate Programs in Science and Engineering, 1970-72 and 1972-74 72-311

*Undergraduate Enrollments in Science and Engineering 71-42

*Enrollment Increase in Science and Mathematics in Public Secondary Schools, 1948-49 to 1969-70 71-30

*Trends in Graduate Science and Engineering, 1960-70 71-15

**Secondary School Science Teachers, 1969. Background and Professional Characteristics ..... —

Estimating Higher Education Enrollments and Degrees (In Various Science and Engineering Fields and in All Other Fields) ..... —

*Published in bulletin form. See pp. 8-11 for full listing of the four SRS bulletin series. Each series listed chronologically by NSF number.

**Indicates preliminary data were released in one of the four SRS bulletin series listed on pp. 8-11.

STUDIES AT THE SECTORAL LEVEL

Government Studies

FEDERAL GOVERNMENT

Federal Funds for Research, Development, and Other Scientific Activities
- ‡**FY 1976, 1977, and 1978, Vol. XXVI ..... In press
- ‡**FY 1975, 1976, and 1977, Vol. XXV 77-301
- ‡**FY 1974, 1975, and 1976, Vol. XXIV 75-334
- ‡**FY 1973, 1974, and 1975, Vol. XXIII 74-320
- ‡**FY 1972, 1973, and 1974, Vol XXII 74-300
- **FY 1971, 1972, and 1973, Vol. XXI 72-317
- **FY 1970, 1971, and 1972, Vol. XX 71-35
- **FY 1969, 1970, and 1971, Vol. XIX 70-38
- FY 1968, 1969, and 1970, Vol. XVIII 69-31
- FY 1967, 1968, and 1969, Vol. XVII 68-27
- FY 1966, 1967, and 1968, Vol. XVI 67-19
- FY 1965, 1966, and 1967, Vol. XV 66-25
- FY 1964, 1965, and 1966, Vol. XIV 65-19
- FY 1963, 1964, and 1965, Vol. XIII 65-13
- FY 1962, 1963, and 1964, Vol. XII 64-11

Federal Funds for Science
- FY 1961, 1962, and 1963, Vol. XI 63-11
- FY 1960, 1961, and 1962, Vol. X 61-82

Federal Funds for Science. The Federal Research and Development Budget
- FY 1959, 1960, and 1961, Vol. IX 60-80
- *FY 1958, 1959, and 1960, Vol. VIII 59-40
- FY 1957, 1958, and 1959, Vol. VII 58-30
- FY 1956, 1957, and 1958, Vol. VI 57-24
- FY 1955, 1956, and 1957, Vol. V 56-19
- FY 1954, 1955, and 1956, Vol. IV ..... —
- FY 1953, 1954, and 1955, Vol. III ..... —
- FY 1952, 1953, and 1954, Vol. II ..... —

Federal Funds for Scientific Research and Development at Nonprofit Institutions, 1950-1951 and 1951-1952, Vol. I ..... —

Geographic Distribution of Federal Funds for Research and Development, Fiscal Year 1965 67-8

Funds for Scientific Activities in the Federal Government, Fiscal Years 1953 and 1954 58-14

An Analysis of Federal R&D Funding by Function
- **FY 1969-78 77-326
- **FY 1969-77 76-325
- **FY 1969-76 75-330
- **FY 1969-75 74-313
- **FY 1969-74 73-316
- **FY 1963-73 72-313

An Analysis of Federal R&D Funding by Budget Function
- **FY 1960-72 71-25

Federal Scientific, Technical, and Health Personnel
- *1973 74-316
- *1972 74-301
- *1971 73-309
- *1970 71-47

Scientific, Technical, and Health Personnel in the Federal Government 1969 70-44

Scientific and Technical Personnel in the Federal Government
- *1974 76-308
- 1968 70-24
- 1967 69-26
- *1966 68-16
- 1964 67-21
- 1961 and 1962 65-4
- 1959 and 1960 62-26

Scientists and Engineers in the Federal Government, October 1958 61-43

Scientific Manpower in the Federal Government, 1954 57-32

STATE AND LOCAL GOVERNMENT

- **Research and Development in State Government Agencies, Fiscal Years 1972 and 1973 ... 75-303
- *R&D Expenditures of State Public Institutions, Fiscal Year 1973 75-311

R&D Activities in State Government Agencies
- **FY 1967 and 1968 70-22
- FY 1964 and 1965 67-16

Employment of Scientific and Technical Personnel in State Government Agencies. Report on a 1959 Survey 61-17

Scientific Activities in Six State Governments. Summary Report on a Survey, Fiscal Year 1954 58-24

**Research and Development in Local Governments, Fiscal Years 1968 and 1969 71-6

**R&D Activities of Local Governments, Fiscal Years 1966 and 1967 69-14

ORGANIZATION

Directory of Federal R&D Installations 70-23

*Published in bulletin form. See pp. 8-11 for full listing of the four SRS bulletin series. Each series listed chronologically by NSF number.

**Indicates preliminary data were released in one of the four SRS bulletin series listed on pp. 8-11.

‡Indicates a separate volume of detailed statistical tables. See p. 7 for a listing.

Federal Organization for Scientific Activities, 1962 62-37

Organization of the Federal Government for Scientific Activities 56-17

Advisory and Coordinating Mechanisms for Federal Research and Development, 1956-57 57-13

Government-University Relationships in Federally Sponsored Scientific Research and Development 58-10

Federal Financial Support of Physical Facilities and Major Equipment for the Conduct of Scientific Research ..... —

Industrial Studies

Research and Development in Industry

**1975 77-324

**1974 76-322

**1973 73-315

**1972 74-312

**1971 73-305

**1970 72-309

**1969 71-18

**1968 70-29

**1967 69-28

**1966 68-20

**1961 64-9

**1960 63-7

Basic Research, Applied Research, and Development in Industry

**1965 67-12

**1964 66-28

**1963 66-15

**1962 65-18

Funds for Research and Development in Industry

**1959 62-3

**1958 61-32

**1957 60-49

Science and Engineering in American Industry

**1956 59-50

1953-54 56-16

*Research and Development in the Electrical Equipment and Communications Industry, 1956-62 65-3

*Research and Development in the Chemicals and Allied Products Industry, 1956-61 63-41

*Research and Development in the Aircraft and Missiles Industry, 1956-61 63-19

R&D in the Aircraft and Missiles Industry, 1957-68 69-15

Industrial R&D Funds in Relation to Other Economic Variables 64-25

Publication of Basic Research Findings in Industry, 1957-59 61-62

*Published in bulletin form. See pp. 8-11 for full listing of the four SRS bulletin series. Each series listed chronologically by NSF number.

Directory of Independent Commercial Laboratories Performing Research and Development 57-40

Scientific and Technical Personnel in Industry

*1975 ..... In press

1961 63-32

1960 61-75

1959 60-62

*Scientists and Engineers in American Industry, January 1957 58-38

*Shortages of Scientists and Engineers in Industrial Research ..... —

Universities and Colleges Studies

Federal Support to Universities, Colleges, and Selected Nonprofit Institutions

**Fiscal Year 1975 77-311

**Fiscal Year 1974 76-305

**Fiscal Year 1973 75-304

**Fiscal Year 1972 74-305

**Fiscal Year 1971 73-300

**Fiscal Year 1970 71-28

**Fiscal Year 1969 70-27

Federal Support to Universities and Colleges

Fiscal Year 1968 69-32

Fiscal Year 1967 69-7

Fiscal Year 1963-66 67-14

Federal Support for Academic Science and Other Educational Activities in Universities and Colleges, Fiscal Year 1965 66-30

Federal Support of Research and Development at Universities and Colleges and Selected Nonprofit Institutions, Fiscal Year 1968 69-33

Federal Funds for Academic Science

Fiscal Year 1970 72-301

**Fiscal Year 1969 71-7

Expenditures for Scientific and Engineering Activities at Universities and Colleges

‡**Fiscal Year 1975 77-307

‡**Fiscal Year 1974 76-303

**Fiscal Year 1973 75-316

Manpower Resources for Scientific Activities at Universities and Colleges

‡**January 1976 77-308

‡**January 1975 76-311

‡**January 1974 74-315

Resources for Scientific Activities at Universities and Colleges

**1971 72-315

**Indicates preliminary data were released in one of the four SRS bulletin series listed on pp. 8-11.

‡Indicates a separate volume of detailed statistical tables. See p. 7.

**1969 70-16
*1964 66-27

Scientific Research and Development in Colleges and Universities
**1958 62-44
**1953-54 59-10

**Scientists and Engineers in Colleges and Universities, 1961 65-8

Junior College Teachers of Science, Engineering, and Technology, 1967 69-3

Science and Engineering Staff in Universities and Colleges, 1965-75 67-11

Systems for Measuring and Reporting the Resources and Activities of Colleges and Universities 67-15

*Faculty Consulting: College and University Policies, Practices, and Problems 66-9

A Case Study of Support of Scientific Engineering Research Proposals 63-22

Nonprofit Institutions Studies

**R&D Activities of Independent Nonprofit Institutions, 1973 75-308

Scientific Activities of Independent Nonprofit Institutions
**1970 71-9
1966 69-16
1964 67-17

**Scientific Research and Development in Nonprofit Organizations—Expenditures and Manpower, 1957 61-37

**Research and Other Activities of Private Foundations, 1960 64-14

Research Expenditures of Foundations and Other Nonprofit Institutions, 1953-54 58-2

Scientific Research Expenditures by the Larger Private Foundations ..... —

Research and Development by Nonprofit Research Institutes and Commercial Laboratories, 1953 56-15

Research by Cooperative Organizations. A Survey of Scientific Research by Trade Associations, Professional and Technical Societies, and Other Cooperative Groups, 1953 56-12

*Published in bulletin form. See pp. 8-11 for full listing of the four SRS bulletin series. Each series listed chronologically by NSF numbers.

**Indicates preliminary data were released in one of the four SRS bulletin series listed on pp. 8-11.

DETAILED STATISTICAL TABLES

(See General Notes)

Graduate Science Education: Student Support and Postdoctorals
- Fall 1976 77-319
- Fall 1975 76-318
- Fall 1974 75-322
- Fall 1973 ..... 74-318-A

Expenditures for Scientific Activities at Universities and Colleges
- Fiscal Year 1976 77-316
- Fiscal Year 1975 76-316
- Fiscal Year 1974 75-318

Manpower Resources for Scientific Activities at Universities and Colleges
- January 1977 77-321
- January 1976 76-321
- January 1975 75-329
- January 1974 ..... 75-300-A

Federal Funds for Research, Development, and Other Scientific Activities
- FY 1976, 1977, and 1978, Vol. XXVI 77-317
- FY 1975, 1976, and 1977, Vol. XXV 76-315
- FY 1974, 1975, and 1976, Vol. XXIV 75-323
- FY 1973, 1974, and 1975, Vol. XXIII 74-320-A
- FY 1972, 1973, and 1974, Vol. XXII ..... —

Federal Support to Universities, Colleges, and Selected Nonprofit Institutions
- FY 1976 77-325
- FY 1975 77-303
- FY 1974 75-325

Characteristics of Doctoral Scientists and Engineers in the United States, 1973. A Report Based on the National Science Foundation's Manpower Characteristics System 75-312-A

Engineers, By Field. The 1972 Scientist and Engineer Population Redefined. Volume 2. Labor Force and Employment Characteristics 76-306

FOREIGN STUDIES

Scientific and Engineering Manpower in Communist China, 1949-1963 65-14

Education and Professional Employment in the USSR 61-40

Soviet Professional Manpower—Its Education, Training, and Supply ..... —

Professional Manpower and Education in Communist China 61-3

SCIENCE RESOURCES STUDIES HIGHLIGHTS

Industrial R&D Spending, 1968 70-12

Research and Development in State Government Agencies, Fiscal Year 1967 and 1968 70-13

Federal Support to Universities and Colleges, Fiscal Year 1969 70-26

Federal Funds for R&D Continue to Remain Level 70-28

Impact of Changes in Federal Science Funding Patterns on Academic Institutions .. 70-39

Growth Rate of R&D Activities in Independent Nonprofit Institutions Slackened During 1966-69 70-43

Local Government R&D Activities Double From 1966 to 1969 But Remain Small 70-45

Industrial R&D Spending, 1969 70-47

Federal Funds for Academic Science, Fiscal Year 1969 70-49

Immigrant Scientists, Engineers, and Physicians Increase in FY 1970 71-11

Secondary School Science Teachers (Experience and Employment) 71-12

Recent Trends in Enrollment and Manpower Resources in Graduate Science Education, 1969-70 71-14

Federal Support to Universities and Colleges, Fiscal Year 1970 71-16

Federal R&D Expenditures Related to Budget Functions, 1960-72 71-19

Federal R&D Funding Shows Upward Trend ... 71-24

Unemployment Rates for Scientists, Spring 1971 71-26

Enrollment Increase in Science and Mathematics in Public Secondary Schools, 1948-49 to 1969-70 71-30

Estimated Academic R&D Direct Price Trends 50 Percent Higher Over Decade 1961-71 71-32

Unemployment Rate for Engineers, June-July 1971 71-33

Industrial R&D Spending, 1970 71-39

Undergraduate Enrollments in Science and Engineering 71-42

Federal Scientific, Technical, and Health Personnel in 1970 71-47

Manpower and Financial Resources Allocated to Academic Science and Engineering Activities, 1965-71 72-302

Functions Other Than Defense and Space Show Rising Share in Federal R&D Expenditures ... 72-305

Total Scientific and Technical Personnel in Industry Remains Level, R&D Personnel Lower in 1970 72-306

First-Year, Full-Time Graduate Science Enrollment Continues to Decline 72-308

Changes in Graduate Programs in Science and Engineering, 1970-72 and 1972-74 72-311

Federal R&D Funding Continues to Rise 72-314

Federal Support to Universities and Colleges Reaches $3.5 Billion in FY 1971 72-316

Company Funds Push Total Industrial R&D Spending to $18 Billion in 1971 72-318

NSF Forecasts Rise in Company-Funded Research and Development and R&D Employment 73-301

Selected Characteristics of Five Engineering and Scientific Occupational Groups, 1972 ... 73-306

Federal Support to Universities and Colleges Rises to $4.1 Billion in FY 1972 73-307

Academic R&D Expenditures Reached $3.3 Billion in 1972 73-308

Graduate Science Enrollment Declines 2 Percent From 1971 to 1972 73-310

Immigrant Scientists and Engineers Decline in FY 1972, Physicians Increase Sharply 73-311

Federal R&D Funding Shows Little Change, Though Priorities Shift 73-312

Federal R&D Support to State and Local Governments Gaining in Emphasis 73-313

Continued Growth Planned for Federal Civilian R&D Programs 73-314

Industrial Research and Development Approaches $20 Billion in 1972 73-317

Federal Scientific and Technical Personnel Increase Slightly in 1972; Health Personnel Gains Sharply 74-301

Immigration of Scientists and Engineers Drops Sharply in FY 1973; Physician Inflow Still Near FY 1972 Peak 74-302

Academic R&D Expenditures Up 9 Percent in 1973 74-306

Federal Funding in Higher Education: Academic Science Shows Decline in FY 1973 74-307

1973 Graduate Science Enrollment Down Another 2 Percent 74-308

R&D Expenditures of Independent Nonprofit Institutions Approach $1 Billion in 1973 74-309

Federal R&D Priorities Shifted in FY 1974 74-310

State Agency R&D Activities Almost Quadrupled From FY 1964 to FY 1973 74-311

Federal R&D Funding for FY 1975 Continues to Decline as a Share of the Total Budget 74-314

Employment of Life-Scientists Up in 1974—Accounts for Nearly All Growth of Scientists and Engineers in Doctorate-Granting Institutions 74-315

Federal Scientific and Technical Personnel Decline in 1973 74-316

20-Percent Increase in Energy Activity Paces Industrial R&D Spending in 1973 74-319

Graduate Enrollment Up in Biological Sciences, Fall 1974 74-321

The 1972 Scientific and Engineering Population Redefined 75-305

Separately Budgeted Academic R&D Expenditures Decline in Real Terms in FY 1974 75-306

National Sample of Scientists and Engineers: Changes in Employment, 1970-72 and 1972-74 75-309
Racial Minorities in the Scientist and Engineer Population 75-314
National Sample of Scientists and Engineers: Participation in National Programs and Changes in Educational Attainment, 1972-74 75-317
Defense, Space and Energy Account for Most of Record Increase in Federal R&D Total in 1976 75-320
Federal R&D Funding Shows Significant Rise in FY 1976 75-321
Federal Support to Universities and Colleges Approached $4.5 Billion in FY 1974 75-324
Selected Employment and Labor Force Characteristics of the Redefined Science and Engineering Population 75-326
Graduate Science Enrollment in 1974 Shows First Increase Since 1969 75-328
Employment of Academic Scientists and Engineers Increase From January 1974 to January 1975 75-331
National Sample of Scientists and Engineers: Median Annual Salaries, 1974 75-332
Graduate Science Enrollment in Fall 1975 is Up Again for Second Straight Year 75-335
Industrial R&D Expenditures Rise to $22 Billion in 1974 76-300
Academic R&D Spending Up 12 Percent in FY 1975 76-307
R&D Spending to Top $38 Billion in 1976 76-309
The Nation's Science and Engineering Manpower Resources: 1974 76-312
Federal R&D Funding Shows Moderate Increase for FY 1977 76-317
Real Increases Seen for Federal R&D Funding of Energy, Education, Science, and Defense in FY 1977 76-319
Self-Supported Graduate Science Students Increased by 22 Percent in 1975 76-320
Energy Increase of 18 Percent Paces Industrial R&D Spending in 1975 76-324
Largest Increase in Employment of Doctoral Scientists and Engineers is in Industrial Sector: 1973-75 76-326
Federal Agencies Allocated Over $4.5 Billion to Universities and Colleges in FY 1975 76-327
Employment of Academic Scientists and Engineers Increases 3 Percent in 1976 76-328
Graduate Science and Engineering Enrollment Up Only 1 Percent in 1976 77-302
R&D Spending Reaches Nearly $41 Billion in 1977 77-306
Private Industry Employment of Scientists and Engineers in 1975 Shows 5-Year Decline 77-312
Academic R&D Expenditures Up 9 Percent in FY 1976 77-314
Aptitude Test Scores of Prospective Graduate Students in Science Remained Essentially the Same From 1970 to 1975 77-318
Defense and Energy Spur Federal R&D Growth From FY 1974 to FY 1978 77-320
National Sample of Scientists and Engineers: Changes in Employment, 1972-74 and 1974-76 77-322
Federal R&D Funding Shows Strong Recent Rise But Little Real Growth in FY 1978 77-323
Academic Employment of Full-Time Scientists and Engineers Increases Another 3 Percent in 1977 77-328

REVIEWS OF DATA ON SCIENCE RESOURCES

No. 1. Research and Development in American Industry, 1963 64-26
No. 2. Salaries and Professional Characteristics of U.S. Scientists, 1964 64-27
No. 3. Research and Development in the Electrical Equipment and Communication Industry, 1956-62 65-3
No. 4. Research Funds Used in the Nation's Scientific Endeavor, 1963 65-11
No. 5. Scientists and Engineers From Abroad, Fiscal Years 1962 and 1963 65-17
No. 6. Geographic Distribution of Funds for Industrial Research and Development, 1963 65-21
No. 7. Basic Research, Applied Research, and Development in American Industry, 1964 66-6
No. 8. Faculty Consulting: College and University Policies, Practices, and Problems 66-9
No. 9. Resources for Scientific Activities at Universities and Colleges, 1964 66-27
No. 10. Basic Research, Applied Research, and Development in American Industry, 1965 66-33
No. 11. Salaries and Selected Characteristics of U.S. Scientists, 1966 66-34
No. 12. Research and Development in Industry, 1966 68-5
No. 13. Scientists, Engineers, and Physicians From Abroad, Fiscal Year 1965 68-14
No. 14. Scientific and Technical Personnel in the Federal Government, 1966 68-16
No. 15. Baccalaureate Sources of Science and Engineering Manpower 69-4
No. 16. Salaries and Selected Characteristics of U.S. Scientists, 1968 69-5

No. 17. Research and Development in Industry, 1967 69-12
No. 18. Scientists, Engineers, and Physicians From Abroad, Fiscal Year 1968 69-36
No. 19. Salaries and Selected Characteristics of U.S. Scientists, 1970 70-50
No. 20. Trends in Graduate Education in Science and Engineering, 1960-70 71-15
No. 21. Federal Scientific, Technical, and Health Personnel, 1971 73-309
No. 22. The Federal Role in the Support of Graduate Science and Engineering Education 74-317
No. 23. R&D Expenditures of State Public Institutions, Fiscal Year 1973 75-311
No. 24. Work Activities of Employed Doctoral Scientists and Engineers in the U.S. Labor Force, July 1973 75-110
No. 25. Doctoral Scientists and Engineers in Private Industry, 1973. 76-302
No. 26. Energy and Energy-Related R&D Activities of Federal Installations and Federally Funded Research and Development Centers: Funds, FY 1973-75 (est.) and Manpower, Jan. 1973-75 (est.) 76-304
No. 27. Education and Work Activities of Federal Scientific and Technical Personnel, January 1974 76-308
No. 28. Scientists and Engineers From Abroad: Trends of the Past Decade, 1966-75 77-305
No. 29. Current and Future Utilization of Scientific and Technical Personnel in Energy-Related Activities 77-315

REVIEWS OF DATA ON RESEARCH & DEVELOPMENT

No. 1. Expenditures for Research and Development in the United States, 1953 56-28
No. 2. Funds for Research and Development in Colleges and Universities, 1953-54 57-9
No. 3. Funds for Research in Medical Schools, 1953-54 57-12
No. 4. Exchange of Foreign and American Graduate Students in the Sciences, Engineering, and Other Fields 57-15
No. 5. Funds for Basic Research in the United States, 1953 57-22
No. 6. Faculty Scientific Research Activities at Colleges and Universities, 1953-54 57-27
No. 7. Funds for Research and Development in Engineering Schools, 1953-54 57-33
No. 8. Funds for Research in Agricultural Experiment Stations, 1953-54 57-37
No. 9. Scientists and Engineers in Research and Development, 1954 58-9
No. 10. Research and Development Costs in American Industry, 1956 58-19
No. 11. Highlights of Conference on Research and Development and Its Impact on the Economy 58-25
No. 12. Recent Legislative and Executive Actions on the Federal Budget for Scientific Research and Development, Fiscal Years 1958 and 1959 58-39
No. 13. Research and Development and Economic Growth 59-17
No. 14. Funds for Research and Development Performance in American Industry, 1957 59-46
No. 15. Research and Development Expenditures of Foundations and Health Agencies, 1957 59-55
No. 16. Funds for Research and Development in the United States, 1953-59 59-65
No. 17. Funds for Research in Medical Schools, 1957-58 60-10
No. 18. Research and Development Expenditures of Selected Groups of Nonprofit Institutions, 1957 60-7
No. 19. Funds for Research and Development in Colleges and Universities, Fiscal Year 1958 60-21
No. 20. Funds for Research and Development Performance in American Industry, 1958 60-35
No. 21. Funds for Research and Development in Engineering Schools, Fiscal Year 1958 60-42
No. 22. Funds for Performance of Basic Research in the United States, 1953-58 60-43
No. 23. Federal Contract Research Centers in Colleges and Universities, Fiscal Year 1958 60-61
No. 24. Funds for Performance of Research and Development in American Industry, 1959 60-81
No. 25. Funds for Research and Development in Agricultural Experiment Stations and Agricultural Colleges in the U.S., Fiscal Year 1958 60-70
No. 26. Research and Development and the Gross National Product 61-9
No. 27. Scientists and Engineers Engaged in Research and Development in Colleges and Universities, 1958 61-21
No. 28. Capital Expenditures for Research and Development in Colleges and Universities, Fiscal Year 1958 61-31
No. 29. Scientists and Engineers in Research and Development, 1958 61-49
No. 30. Funds for Performance of Research and Development in American Industry, 1960 61-51
No. 31. Diffusion of Technological Change 61-52
No. 32. Indirect Costs for Research and Development in Colleges and Universities, 1960 62-7

No. 33. *Trends in Funds and Personnel for Research and Development, 1953-61* 62-9
No. 34. Innovation in Individual Firms 62-16
No. 35. Scientific Research and Other Programs of Private Foundations, 1960 62-28
No. 36. Research and Development in American Industry, 1961 62-32
No. 37. Science and Engineering Professional Manpower Resources in Colleges and Universities, 1961 63-4
No. 38. Inquiries into Industrial Research and Development and Innovation 63-12
No. 39. Research and Development in the Aircraft and Missiles Industry, 1956-1961 R&D Funds and R&D Scientists and Engineers 63-19
No. 40. Research and Development in Industry, 1962 63-37
No. 41. National Trends in R&D Funds, 1953-62 63-40
No. 42. Research and Development in the Chemicals and Allied Products Industry, 1956-61 63-41
No. 43. Scientists and Engineers in Engineering Schools, 1961 63-44
No. 44. Decision-Making on Research and Development in the Business Firm 64-6

SCIENTIFIC MANPOWER BULLETIN

No. 1. Manpower Resources in Mathematics, 1951 ..... —
No. 2. Highlights of a Survey of June 1951 College Graduates ..... —
No. 3. Manpower Resources in the Geophysical Sciences ..... —
No. 4. Manpower Resources in Meteorology, 1951 ..... —
No. 5. Highlights of a Survey of Graduate Student Enrollments, Fellowships, and Assistantships, 1954 ..... —
No. 6. Shortages of Scientists and Engineers in Industrial Research ..... —
No. 7. Employment Profile of Scientists in the National Register of Scientific and Technical Personnel, 1954-55 56-21
No. 8. Immigration of Professional Workers to the United States, 1953-56 58-4
No. 9. Foreign Language Knowledge of American Scientists, 1954-55 58-31
No. 10. Scientists and Engineers in American Industry, January 1957 58-38
No. 11. Salary Profile of Scientists in the National Register of Scientific and Technical Personnel, 1956-1958 60-22
No. 12. 1960 Salaries and Characteristics of Scientists in the National Register of Scientific and Technical Personnel 60-78
No. 13. Scientists and Engineers Employed at Colleges and Universities, 1958 61-38
No. 14. Earnings of American Scientists, 1960 61-44
No. 15. Geographic Distribution of Scientists in the National Register of Scientific and Technical Personnel, 1960 61-69
No. 16. Foreign-Language Proficiency of Scientists Reporting to the National Register of Scientific and Technical Personnel, 1960 61-72
No. 17. Summary Characteristics of Scientists Reporting to the National Register of Scientific and Technical Personnel, 1960 62-11
No. 18. Metropolitan Area Distribution of Scientists in the National Register of Scientific and Technical Personnel, 1960 62-33
No. 19. 1962 Salaries and Characteristics of Scientists in the National Register of Scientific and Technical Personnel 62-47
No. 20. Summary of American Science Manpower, 1962 64-5

PUBLICATIONS RESULTING FROM TOTAL OR PARTIAL SUPPORT OF THE DIVISION OF SCIENCE RESOURCES STUDIES, NSF

JANUARY 1967-DECEMBER 1977

The following list of articles and reports are available from the author, publisher, or journal

Those with an asterisk are available from the National Technical Information Service, Springfield, Va. 22151. See identifying number at end of citation.

Economic and Social Aspects of Science and Technology

1967

An Approach to the Evaluation of Basic Research Projects. Cambridge, Mass.: Abt Associates, Inc., Jan. 1967.

1968

"The Economic Impact of Federal Research and Development Programs," H. E. Riley. *Proceedings of the 1967 Annual Meeting of the American Marketing Association, 1968.*

R&D and Small Company Growth. A Statistical Review and Company Case Study, William J. J. Smith and Daniel Creamer, SBE No. 102. New York: National Industrial Conference Board, 1968.

"Statistics of Research and Development in the United States," H. E. Riley. *Proceedings of the 36th Session of the International Statistical Institute, 1968.*

The Mathematical Sciences: A Report, A Report by the Committee on Support of Research in the Mathematical Sciences, Publication No. 1681. Washington, D.C.: National Academy of Sciences—National esearch Council, 1968.

The Mathematical Sciences: Undergraduate Education, A Report by the Committee on Support of Research in the Mathematical Sciences, Publication No. 1682. Washington, D.C.: National Academy of Sciences—National Research Council, 1968.

The Mathematical Sciences: A Collection of Essays. Edited by National Research Council's Committee on Support of Research in the Mathematical Sciences. Cambridge, Mass.: MIT Press, 1968.

**Science, Technolog[illegible] and Public Policy: A Bibliography,* Vol. 1, 1968, Lynton K. Caldwell, ed. Bloomington: Indiana Univ. (PB241199/AS)

A Methodological Approach to Measuring Change in Science Produced by Basic Research. Cambridge, Mass.: Abt Associates, Inc., Dec. 1968.

1969

Academic Institutions as a Source of Science Advice to State and Local Government. W. H. Cape. Kansas City, Kans.: Univ. of Kansas Press, 1969.

Earthquake Engineering Research. Washington, D.C.: National Academy of Sciences—National Research Council, 1969.

**Technology in Retrospect and Critical Events in Science* (TRACES), Vols. I. (PB234767/AS) and II. (PB234768/AS). Chicago: IIT Research Institute, Jan. 1969.

An Exploratory Study of Science Resource Allocation, RM-5804-NSF. Santa Monica: The RAND Corporation, Mar. 1969.

A Comparative Study of the Prospective and Retrospective Approaches to the Evaluation of Proposed Basic Research. Cambridge, Mass.: Abt Associates, Inc., July 1969.

Contract Research and Development Adjuncts of Federal Agencies. Denver: Denver Research Institute, Oct. 1969.

**Science, Technology, and Public Policy: A Bibliography,* Vol. II. Lynton K. Caldwell, ed. Bloomington: Indiana Univ., 1969. (PB241200/AS).

1970

Science Advice in State Government: Case Studies of 9 State Governments. H. M. Sopolsky, ed. Cambridge, Mass.: MIT Press, Summer 1970.

Science and Technology and Its Applications to the Problems of Pollution, Transportation and Employment. Donald Gavin, ed. Proceedings of Western States Conference, Mar. 1970. Denver: Federation of Rocky Mountain States.

Federal Support of Applied Research. Washington, D.C.: Committee on Public Engineering Policy, National Academy of Engineering, 1970.

Priorities in Applied Research, An Initial Appraisal. Washington, D.C.: Committee on Public Engineering Policy, National Academy of Engineering, 1970.

The Life Sciences. Washington, D.C.: National Academy of Sciences, 1970.

1972

"Contributions of R&D to Economic Growth in U.S.," Edwin Mansfield. *Science,* Vol. 175, Feb. 4, 1972, pp. 477-486.

Survival and Growth: The Small R&D Firm. The Proceedings of the First National Conference Dealing with the Problems of the Small Firms in the Research and Development Industry, June 12-14, 1972. Jimmy D. Johnson, ed. Washington, D.C.: The American Univ. Center for the Study of Private Enterprise.

**Science, Technology, and Public Policy: A Bibliography,* Vol. III. Lynton K. Caldwell, ed. Bloomington: Indiana Univ., 1972. (PB241201/AS).

**Attitudes of the U.S. Public Toward Science and Technology. Study I.* Princeton: Opinion Research Corp., Caravan Surveys, May 1972. (PB261815/AS).

1973

**Science, Technology, and Innovation.* Columbus: Battelle Columbus Labs., Feb. 1973. (PB228509/AS)

*Interactions of Science and Technology in the Innovative Process: Some Case Studies. Columbus: Battelle Columbus Labs., Mar. 19, 1973. (PB228508/AS)

Chemistry in the Economy. Washington, D.C.: American Chemical Society, Oct. 1973.

"Rivalry in Industrial Research and Development: An Empirical Study," Henry G. Grabowski and Nevins D. Baxter. *The Journal of Industrial Economics*, Vol. XXI, No. 3. Oxford, England: Basil Blackwell, July 1973.

1974

Dialogues with Management on Research and Development, Monograph No. 21. Guy Black. Washington, D.C.: The George Washington University Program of Policy Studies in Science and Technology, May 1974.

Output Orientation in R&D—A Better Approach?, Monograph No. 22. Guy Black. Washington, D.C.: The George Washington University Program of Policy Studies in Science and Technology, May 1974.

Research, Development and Financial Performance, Monograph No. 23. Guy Black and William A. Fisher. Washington, D.C.: The George Washington University Program of Policy Studies in Science and Technology, May 1974.

Research, Development and Business Conditions, 1960-71, Monograph No. 24. Guy Black. Washington, D.C.: The George Washington University Program of Policy Studies in Science and Technology, May 1974.

The Sensitivity of Types of Research and Development to Business Conditions, Monograph No. 25. Guy Black. Washington, D.C.: The George Washington University Program of Policy Studies in Science and Technology, May 1974.

Patterns of Impact and Response in Research and Development in Industry: Summary of a Study, Monograph No. 27. Guy Black. Washington, D.C.: The George Washington University Program of Policy Studies in Science and Technology, May 1974.

Attitudes of the U.S. Public Toward Science and Technology. Study II. Princeton: Opinion Research Corp., Caravan Surveys, July 1974. (PB262029/AS).

Effects of R&D on the Productivity Growth of Industries: An Exploratory Study. Nestor E. Terleckyj. Washington, D.C.: National Planning Association, Oct. 1974.

1975

Patterns of Association in Research and Development, Monograph No. 26. Guy Black. Washington. D.C.: The George Washington University Program of Policy Studies in Science and Technology, May 1975.

1976

Overseas Research and Development by United States Multinationals, 1966-1975: Estimates of Expenditures and A Statistical Profile, Daniel Creamer. New York: The Conference Board, 1976.

Indicators of International Trends in Technological Innovation. Stephen Feinman and William Fuentevilla. Jenkintown, Pa.: Gellman Associates, Apr. 1976. (PB263738/AS).

Attitudes of the U.S. Public Toward Science and Technology. Study III. Princeton: Opinion Research Corp., Caravan Surveys, Sept. 1976. (In press)

Manpower Studies

OVERALL

1967

A Preliminary Analysis of Interspecialty Mobility of Technical/Professional Manpower Resources, SRI R&D Studies Series. Menlo Park: Stanford Research Institute, Sept. 1967.

"Symposium on Manpower Theory," *The Journal of Human Resources*, Vol. II, No. 2, Spring 1967.

Technician Manpower, 1966-80. Washington, D.C.: Department of Labor, Bureau of Labor Statistics, 1967.

1969

Characteristics of America's Engineers and Scientists: 1960 and 1962. Washington, D.C.: Department of Commerce, Bureau of the Census, Aug. 1969.

1970

Work Complex Study. New York: American Institute of Physics, Mar. 1970.

1973

Persons in Engineering, Scientific, and Technical Occupations: 1970 and 1972. Washington, D.C.: Department of Commerce, Bureau of the Census, July 1973.

"Marriage and Fertility Patterns of Scientists and Engineers, A Comparison of Males and Females," Deborah S. David. *1973 Annual Proceedings of American Sociological Association.* Washington, D.C.: American Sociological Association, 1973.

Employment of Scientists and Engineers, 1950-70. Washington, D.C.: Department of Labor, Bureau of Labor Statistics, Sept. 1973.

1974

Assessing the Impact of Changes in National Priorities for the Utilization of Scientists and Engineers. Washington, D.C.: National Planning Association, Feb. 1974. (PB239752/AS)

Doctoral Scientists and Engineers in the United States: 1973 Profile. Washington, D.C.: National Academy of Sciences, Mar. 1974.

Characteristics of Persons in Engineering and Scientific Occupations: 1972, Technical Paper 33. Washington, D.C.: Department of Commerce, Bureau of the Census, Apr. 1974.

1975

"Selected Characteristics of Persons in Fields of Science or Engineering: 1974," *Current Population Report*, Special Studies, Series P-23, No. 53. Washington, D.C.: Department of Commerce, Bureau of the Census, July 1975.

Field Mobility of Doctoral Scientists and Engineers. Washington, D.C.: National Academy of Sciences, Dec. 1975. (PB262990/AS)

1977

Doctoral Scientists and Engineers in the United States: 1975 Profile. Washington, D.C.: National Academy of Sciences, Jan. 1977. (PB262992/AS)

Employment Status of Ph.D. Scientists and Engineers: 1973 and 1975. Washington, D.C.: National Academy of Sciences, Jan. 1977. (PB262991/AS)

* *Supply and Demand for Scientists and Engineers: A Review of Selected Studies.* Betty Vetter. Washington, D.C.: Scientific Manpower Commission, Feb. 1977. (PB268789/AS).

* *The Impact of Federal Programs and Policies on Manpower Planning for Scientists and Engineers. Report of a Workshop.* Washington, D.C.: Scientific Manpower Commission, May 1977. (PB268783/AS).

ENGINEERING

1967

"Chemical Industry Engineers Outearn Other Engineers," *Chemical and Engineering News*, July 31, 1967.

"A Realistic Salary Policy for Mining Industry Engineers," John Alden. *Mining Congress Journal*, Sept. 1967.

1968

Teaching Income and Other Professional Earnings of Engineering Faculty, 1966. New York: Engineers Joint Council, Feb. 1968.

Salaries and Income of Engineering Teachers, 1966. New York: Engineering Manpower Commission, Feb. 1968.

1969

Estimating Manpower Needs in Engineering by Analysis of Personnel Transactions. Los Angeles: Univ. of California, 1969.

"The Engineering Profession: A New Profile," *Engineer*, Mar.-Apr. 1969, pp. 24-31.

1971

A Profile of the Engineering Profession. New York: Engineers Joint Council, Mar. 1971.

Original Data From the 1971 Survey of Engineering Employment. New York: Engineers Joint Council, Nov. 1971.

American Engineering Manpower, 1969. New York: Engineers Joint Council, Nov. 1971.

PHYSICAL SCIENCES

1967

Physics Manpower, 1966. New York: American Institute of Physics, 1967.

"Chemists Median Pay: $12,000," *Chemical and Engineering News*, Jan. 2, 1967.

"Chemists' Salaries Continued to Rise in 1966," David A. H. Roethel. *Chemical and Engineering News*, Jan. 16, 1967.

"ACS Survey of NSF Data Shows Organic Chemists Decreasing," *Chemical and Engineering News*, June 19, 1967.

"Clinical Chemists Draw Top Salaries," David A. H. Roethel. *Chemical and Engineering News*, Aug. 14, 1967.

Current Awareness Methods Used by Physicists. New York: American Institute of Physics, Sept. 1967.

"Chemists' Median Salaries Rose 9.1 Percent in 1964-66," David A. H. Roethel. *Chemical and Engineering News*, Nov. 27, 1967.

1968

"Chemists' Salaries Set Record Gains in 1966-68," *Chemical and Engineering News*, Oct. 21, 1968.

1969

"Chemists' Economic Status," David A. H. Roethel. *Chemical and Engineering News*, Dec. 8, 1969, pp. 62-65.

Physics Manpower: 1969. New York: American Institute of Physics, 1969.

ENVIRONMENTAL SCIENCES

1967

"Earth Science Manpower," Bonnie C. Henderson. *Geotimes*, Jan. 1967, Vol. 12, No. 1.

"Earth Scientists in the National Register," Bonnie C. Henderson. *Geotimes*, Apr. 1967.

A Study as to the Numbers and Characteristics of Oceanographic Personnel in the United States, 1967. Miami: International Oceanographic Foundation, Dec. 1967.

1968

"Top Salaries in Geosciences," Bonnie C. Henderson. *Geotimes*, Feb. 1968.

"Student Enrollment in Earth Sciences, 1967-68," *Geotimes*, Nov. 1968.

1969

"Manpower and Salaries: A Report on the Earth Sciences Section of The 1968 National Register of Scientific and Technical Personnel," Bonnie C. Henderson. *Geotimes*, Feb. 1969, pp. 13-15.

* *A Study as to the Numbers and Characteristics of Oceanographic Personnel in the United States, 1967*, prepared by International Oceanographic Foundation, July 1969. Springfield, Va.: Federal Clearinghouse for Scientific and Technical Information, PB 186118.

1971

"Manpower and Salaries," Bonnie C. Henderson. *Geotimes*, Feb. 1971.

MATHEMATICAL SCIENCES

1967

"1966 NSF National Register of Scientific and Technical Personnel," *Notices of the American Mathematical Society*, Feb. 1967, Vol. 14, No. 2. (Also in *Bulletin of the American Meteorological Society*, Aug. 1966.)

1969

"National Register Report," *Notices of the American Mathematical Society*, Vol. 16, No. 3, Apr. 1969, pp. 478-79.

1971

"The 1970 National Register Data on Mathematical Scientists." *Notices of the American Mathematical Society*, Vol. 18, No. 3, Apr. 1971.

LIFE SCIENCES

1967

"Analysis of 1966 National Register of Scientific and Technical Personnel Data for Biomedical Scientists. I. The Basic Data," Beverly L. Clarke, *Federation Proceedings*, Dec. 1967.

1968

"Analysis of 1966 National Register of Scientific and Technical Personnel Data for Biomedical Scientists. II. Salary Comparisons," Beverly L. Clarke. *Federation Proceedings*, Vol. 27, No. 5, Sept.-Oct. 1968.

1969

"Analysis of 1966 National Register of Scientific and Technical Personnel Data for Biomedical Scientists III. Employment Location vs. Doctoral Institution Location; Specialty vs. Doctoral Major," Beverly L. Clarke. *Federation Proceedings*, Vol. 28, No. 5, Sept-Oct. 1969.

1971

"Manpower Information About the American Biologists," Walter G. Peter, III. *Bio Science*, Vol. 21, No. 9, May 1, 1971.

1975

"Non-Federal Funding of Biomedical Research and Development," Frank Atelsek. *Higher Education Panel Reports No. 25*. Washington, D.C.: American Council on Education, 1975.

PSYCHOLOGY

1968

"Psychologists' Manpower: A Report on the 1966 National Register of Scientific and Technical Personnel," Alan Boneau. *American Psychologist*, May 1968.

SOCIAL SCIENCES

1967

Directory, Constitution, and By-Laws—American Sociological Association, 1967. Washington, D.C.: American Sociological Association, Sept. 1967.

"The Economic Status of American Economists, 1966. A Preliminary Report," N. Arnold Tolles. *American Economic Review*, Dec. 1967.

1968

Economic Status of Teachers, 1966-67. Washington, D.C.: National Education Association, Jan. 1968.

American Economic Review Supplement. Evanston: American Economic Association, Dec. 1968.

1969

"Initial Report: Information on Political Scientists in the NSF Register," *Political Science*, Vol. II, Winter 1969, pp. 3-11.

1971

"The Political Science Profession in 1970. Basic Characteristics," Earl M. Baker. Political Science, Winter 1971, Vol. IV, No. 1.

OTHER

1967

Employment of Scientific, Professional, and Technical Personnel in State Governments, January 1964. Review of Occupational Employment Statistics, Bulletin No. 1557. Washington, D.C.: Department of Labor, Bureau of Labor Statistics, 1967.

"Foreigners in the U.S. Economics Profession," H. G. Grubel and A. D. Scott. *American Economic Review*, Mar. 1967.

1968

Characteristics of Foreign Born and Educated Scientists in the United States, 1966. Herbert Grubel. Philadelphia: Univ. of Pennsylvania, Aug. 1968.

1969

Scientific and Technical Personnel in Industry, 1961-1966. Washington, D.C.: Department of Labor, Bureau of Labor Statistics, 1969.

Motives and Qualifications of Scientists and Engineers Emigrated From Sweden to the U.S.A., FEK Report No. 39. Goran Friborg. Stockholm, Sweden: Committee on Research Economics of the Swedish Councils, Apr. 1969.

1970

Educational and Employment—The Early Careers of College Graduates. Bureau of Social Science Research. Baltimore, Md.: The Johns Hopkins Press, 1970.

Federal Spending and Scientist and Engineer Employment. Washington, D.C.: Department of Labor, Bureau of Labor Statistics, 1970.

Ph.D. Scientists and Engineers in Private Industry, 1968-80. Washington, D.C.: Department of Labor, Bureau of Labor Statistics, 1970.

1971

Scientific and Technical Personnel in Industry, 1969. Washington, D.C.: Department of Labor, Bureau of Labor Statistics, 1971.

1974

Computer Manpower Outlook, Bulletin 1826. Washington, D.C.: Department of Labor, Bureau of Labor Statistics, 1974.

**The Demand for Scientific and Technical Manpower in Selected Energy-Related Industries, 1970-85: A Methodology Applied to a Selected Scenario of Energy Output. A Summary*. Ivars Gutmanis, L. Stephen Guiland, Rita A. McBrayer, and Richard P. McKenna. Washington, D.C.: National Planning Association, Sept. 1974. (PB237308/AS)

1975

Impact of Federal Pollution Control and Abatement Expenditures on Manpower Requirements, Bulletin 1836. Washington, D.C.: Department of Labor, Bureau of Labor Statistics, 1975.

**The Demand for Scientific and Technical Manpower in Selected Energy-Related Industries, 1970-85: A Methodology Applied to a Selected Scenario of Energy Output*. Washington, D.C.: National Planning Association, 1975. (PB240865/AS)

1976

Applicability of AAMC Data to NSF Surveys of Manpower Resources. Gerlandino Agro and Thomas Larson. Washington, D.C.: The Association of American Medical Colleges, Aug. 1976.

1977

**Scientific and Technical Personnel in Energy-Related Activities: Current* Situation and Future Requirements. Hugh Folk, et. al. Urbana-Champaign: Univ. of Illinois Center for Advanced Computation, July 1977. (PB272884/AS)

Science Education Studies

BASIC DESCRIPTIVE DATA

1967

"Personality Change and the College," R. C. Nichols. *American Educational Research Journal, 1967, 4: 173-190.*

The College Environment, A. W. Astin. Washington, D.C.: American Council on Education, 1967.

"National Norms for Entering College Freshmen—Fall 1966," A. W. Astin and R. J. Panos. *American Council on Education Research Reports*, Jan. 1967, Vol. 2, No. 1.

"They Went to College: A Descriptive Summary of the Class of 1965," Robert J. Panos and A. W. Astin. *American Council on Education Research Reports*, Vol. 2, No. 5, May 1967. (Also in *Proceedings of the Sixth Annual Forum of the Association for Institutional Research*, May 1967, 85-93.)

Doctorate Recipients From United States Universities, 1958-1966, Publication 1489. Washington, D.C.: National Academy of Sciences—National Research Council, Oct. 1967.

"The Academic and Financial Status of Graduate Students, Spring 1965," OE-54042, J. Scott Hunter. Washington, D.C.: Department of Health, Education, and Welfare, Fall 1967.

"National Norms for Entering College Freshmen—Fall 1967," A. W. Astin and R. J. Panos. *American Council on Education Research Reports*, Fall 1967, Vol. 2, No. 7.

"A Profile of 1965 Entering College Freshmen," R. J. Panos and A. W. Astin. *College and University*, Winter 1967, 42: 160-174.

1968

"Outstanding Negro High School Students: A One-Year Followup," K. Burgdorf. *National Merit Scholarship Corporation Research Reports*, 1968, Vol. 5, No. 4.

"Personal and Environment Determinants of Student Activism," A. W. Astin. *Proceedings*, 76th Annual Convention, APA, 1968.

"College Preferences of Able Negro Students: A Comparison of Those Having Predominantly Negro Institutions and Those Having Predominantly White Institutions," Warren Blumenfield, *College and University*, Spring 1968.

"The Backgrounds and Early Careers of Engineering Doctorate Recipients," Joan Creager. Washington, D.C.: National Academy of Sciences, May 1968. (also in *Journal of Engineering Education*, Nov. 1968).

Summary Report 1967. Doctorate Recipients From United States Universities. Washington, D.C.: National Academy of Sciences—National Research Council, May 1968.

"Undergraduate Achievement and Institutional Excellence," A. W. Astin, *Science*, Aug. 16, 1968, 161: 661-668.

"Careers of Ph.D.'s: Academic vs. Non-academic," Lindsay Harmon, Washington, D.C.: National Academy of Sciences, Oct. 1968.

Report on Doctoral Programs. Washington: National Academy of Sciences, Dec. 1968.

"National Norms for Entering College Freshmen—Fall 1968," J. A. Creager, A. W. Astin, R. F. Boruch, and A. E. Bayer. *American Council on Education Research Reports*, Vol. 3, No. 1, Dec. 1968.

1969

"The Educational and Vocational Development of American College Students," A. W. Astin. *American Council on Education Research Reports.*

"A Review of Project Talent: One-Year Follow-up Studies," R. C. Nichols. In *Educational and Psychological Measurements*, by J. C. Flanagan, *et al.*, 1969.

"The Black Student in American Colleges," A. E. Bayer and R. F. Boruch. *American Council on Education Research Reports*, 1969, Vol. 4, No. 2.

"Financial Resources of Negro College Students: Survey Design and Preliminary Results," R. F. Boruch. *Proceedings of the Social Statistics Section, American Statistical Association*, 1969, pp. 389-97.

The Expansion of Graduate and Professional Education During the Period 1966-1980, Report No. 2. Denver: The Academy for Educational Development, Inc., Apr. 1969.

"Racial Considerations in Admissions," A. W. Astin. *The Racial Crisis in Higher Education.* Washington, D.C.: American Council on Education, Fall 1969, pp. 65-93.

The Invisible University, Postdoctoral Education in the United States. R. B. Curtis. Washington, D.C.: National Academy of Sciences, Oct. 1969.

"Black and White Freshmen Entering Four-Year Colleges," A. E. Bayer and R. F. Boruch. *Educational Record*, Winter 1969, pp. 371-386.

"National Norms for Entering College Freshmen—Fall 1969," J. A. Creager, A. W. Astin, *et al. American Council on Education Research Reports*, Vol. 4, No. 7, Dec. 1969.

1970

"The First Year of College: A Follow-up Normative Report," A. E. Bayer, D. E. Drew, *et al. American Council Education Research Reports*, Vol. 5, No. 7, 1970.

"The First Year of College: A Follow-Up Normative Report," A. E. Bayer, D. E. Drew, A. W. Astin; R. F. Boruch, and J. A. Creager, *American Council on Education Research Reports*, Vol. 5, No. 1, 1970.

"A Profile of the Jewish Freshman," D. E. Drew, *American Council on Education Research Reports*, Vol. 5, No. 4, 1970.

"College and University Faculty: A Statistical Description," A. E. Bayer. *American Council on Education Research Reports*, Vol. 5, No. 5, 1970.

"National Norms for Entering College Freshmen—Fall 1970." A. W. Astin, *et al. American Council on Education Research Reports*, Vol. 5, No. 6, 1970.

"Able Black Americans in College: Entry and Freshman Experiences," F. H. Borgen. *National Merit Scholarship Corporation Research Reports*, Vol. 6, No. 2, 1970.

Summary Report 1969. Doctorate Recipients From United States Universities. Washington, D.C.: National Research Council, April 1970.

1971

"The American Graduate Student: A Normative Description," J. A. Creager, *American Council on Education Research Reports*, Vol. 6, No. 5, 1971.

"The American Freshman: National Norms for Fall 1971," ACE Office of Research Staff. *American Council on Education Research Reports*, Vol. 6, No. 6, 1971.

"Characteristics and Performance of NMSQT Participants," D. J. Watley. *National Merit Scholarship Corporation Research Reports*, Vol. 7, No. 3, 1971.

"Black and Nonblack Youth: Characteristics and College Attendance Patterns," D. J. Watley. *National Merit Scholarship Corporation Research Reports*, Vol. 7, No. 4, 1971.

"Black and Nonblack Youth: Does Marriage Hinder College Attendance?" D. J. Watley. *National Merit Scholarship Corporation Research Reports*, Vol. 7, No. 5, 1971.

"Black and Nonblack Youth: Finances and College Attendance," D. J. Watley. *National Merit Scholarship Corporation Research Reports*, Vol. 7, No. 6, 1971.

"Characteristics of Academic 'Brains' in Different Career Fields," D. J. Watley, *National Merit Scholarship Corporation Research Reports*, Vol. 7, No. 7, 1971.

"Bright Black Youth: Their Educational Plans and Career Aspirations," D. J. Watley. *National Merit Scholarship Corporation Research Reports*, Vol. 7, No. 8, 1971.

Summary Report 1970. Doctorate Recipients from United States Universities. Washington, D.C.: National Research Council, Mar. 1971.

"Survey of First-Year Graduate and Postdoctoral Enrollment in Science and Engineering," *Higher Education Panel Report No. 1.* Washington, D.C.: American Council on Education, Aug. 1971.

"Research Support for Science Faculty," B. A. Blandford and D. Dutton. *Higher Education Panel Report No. 2.* Washington, D.C.: American Council on Education, Nov. 1971.

Report on the Council of Graduate Schools-Graduate Record Examinations Board 1971-72 Survey of Graduate Enrollment. Washington, D.C.: The Council of Graduate Schools, Dec. 1971.

1972

"College Dropouts: A National Profile," A. W. Astin. *American Council on Education Research Reports*, Vol. 7, No. 1, 1972.

"Enrollment of Junior-Year Students (1970-1971)," Barbara A. Blandford and Charles L. Sell. *Higher Education Panel Report No. 5.* Washington, D.C.: American Council on Education, 1972.

"Changes in Graduate Programs in Science and Engineering, 1970-72 and 1972-74," Barbara A. Blandford. *Higher Education Panel Report No. 4*, Washington, D.C.: American Council on Education, 1972.

"Expected First-Year Graduate Enrollment in Science and Engineering, Fall 1972," Barbara A. Blandford and Joan C. Trexler. *Higher Education Panel Report No. 10.* Washington, D.C.: American Council on Education, 1972.

"The Vietnam-Era Veteran Enters College," David E. Drew and John A. Creager. *American Council on Education Research Reports*, Vol. 7, No. 4, 1972.

Secondary School Science Teachers, 1969: Background and Professional Characteristics. Washington, D.C.: Vitro Laboratories and National Science Foundation, Jan. 1972.

Summary Report 1971. Doctorate Recipients From United States Universities. Washington, D.C.: National Research Council, Apr. 1972.

"The American Freshman: National Norms for Fall 1972." *American Council on Education Research Reports*, Vol. 7, No. 5, Dec. 1972.

Undergraduate Education in the Mathematical Sciences, 1970-71. J. Jewett and C. R. Phelps. Washington, D.C.: Conference Board of the Mathematical Sciences, Dec. 1972.

1973

"Enrollment of Junior-Year Students (1971 and 1972)," J. E. Dutton and B. A. Blandford. *Higher Education Panel Report No. 12.* Washington, D.C.: American Council on Education, Spring 1973.

"Four Years After College Entry," A. E. Bayer, J. T. Royer, and R. M. Webb. *American Council on Education Research Reports*, Vol. 8, No. 1, March 1973.

Beyond the College Years: Final Report on the 1971 Longitudinal Followup of 1961 and 1966 Freshmen. H. S. Astin, E. H. El-Khawas, and A. S. Bisconti. Washington, D.C.: American Council on Education and Center for Human Services.

"Courses and Enrollments in Ethnic/Racial Studies," J. E. Dutton. *Higher Education Panel Report No. 14.* Washington, D.C.: American Council on Education, Aug. 1973.

"Undergraduate and Graduate Study in Scientific Fields," H. S. Astin and A. S. Bisconti. *American Council on Education Research Reports*, Vol. 8, No. 3, Aug. 1973.

1974

"Expected Enrollment for Masters or Higher Degrees, Fall 1973," Jeffrey E. Dutton. *Higher Education Panel Reports No 17.* Washington, D.C.: American Council on Education, Mar 1974.

"Production of Doctorates in Selected Fields, 1972-1975," Jeffrey E. Dutton and Elaine H. El-Khawas. 2Higher Education Panel Reports No. 16. Washington, D.C.: American Council on Education, Apr. 1974.

*"The Impact of Office of Education Student Assistance Programs, Fall 1973," Elaine H. El-Khawas and Joan L. Kinzer. *Higher Education Panel Reports No. 18.* Washington, D.C.: American Council on Education, Apr. 1974. (PB252618/AS)

Summary Report 1973. Doctorate Recipients From United States Universities. Washington, D.C.: National Research Council, May 1974.

*Enrollment of Minority Graduate Students at Ph.D. Granting Institutions," Elaine H. El-Khawas and Joan L. Kinzer. *Higher Education Panel Reports No. 19.* Washington, D.C.: American Council on Education, Aug. 1974. (PB252643/AS)

"Five and Ten Years After College Entry," Elaine H. El-Khawas and Ann A. Bisconti. *American Council on Education Research Reports*, Vol. 9, No. 1, Oct. 1974.

1975

Summary Report 1974. Doctorate Recipients From United States Universities. Washington, D.C.: National Research Council, June 1975.

1976

**Summary Report 1975. Doctorate Recipients From United States Universities.* Washington, D.C.: National Research Council, May 1976. (PB263047/AS)

*"Young Doctorate Faculty in Selected Science and Engineering Departments, 1975 to 1980," Frank J. Atelsek and Irene L. Gomberg. *American Council on Education-Higher Education Panel Reports*, Survey No. 30, Aug. 1976. (PB262989/AS)

1977

A Century of Doctorates. L. R. Harmon. Washington, D.C.: National Academy of Sciences-National Research Council, 1977.

•*Summary Report 1976. Doctorate Recipients From United States Universities.* Washington, D.C.: National Research Council, Mar. 1977. (PB268836/AS)

STUDENTS' APTITUDES, TESTING, PREDICTION, ETC.

1967

"Criteria of Student Development," Robert J. Panos. *American Council on Education Research Reports,* Fall 1967, Vol. 2, No. 6, 14-28.

1968

"Analyzing College Effects: Correlation vs. Regression," C. E. Werts and D. J. Watley. *National Merit Scholarship Corporation Research Reports,* 1968, Vol. 5, No. 2.

"A Student's Dilemma: Big Fish-Little Pond or Little Fish-Big Pond," C. E. Werts and D. J. Watley. *National Merit Scholarship Corporation Research Reports,* 1968, Vol. 5, No. 3. (Also in *Journal of Counseling Psychology,* 1969, 16: 14-19.)

"Do Counselors Know When to Use Their Heads Instead of the Formula?" D. J. Watley. *Journal of Counseling Psychology,* 1968, 15: 84-88.

"Heredity, Environment and School Achievement," R. C. Nichols. *Measurements and Evaluation in Guidance,* 1968, Vol. 1, 122-129.

"Where the Brains Are," R. C. Nichols. *National Merit Scholarship Corporation Research Reports,* 1968, Vol. 4, No. 5.

"Selecting Talented Negro Students: Nominations vs. Test Performance," W. S. Blumenfield. *National Merit Scholarship Corporation Research Reports,* 1968, Vol. 5, No. 6.

"An Exploration of the Utility of Self-Reported Test Scores," Robert J. Panos. Presented at AERA Meeting, Chicago, Feb. 1968.

"Correlates of Birth Order: Effect or Artifact," Robert J. Panos. Presented at AERA Meeting, Chicago, Feb. 1968.

1969

"Folklore of Selectivity," A. W. Astin. *The Saturday Review,* Dec. 1969, pp. 57-58, 69-70.

1970

"Merit Scholars and the Fulfillment of Promise," D. J. Watley and R. Kaplan. *National Merit Scholarship Corporation Research Reports,* Vol. 6, No. 3, 1970.

"Paternal Influence on Talent Development," C. E. Werts and D. J. Watley. *National Merit Scholarship Corporation Research Reports,* Vol. 6, No. 4, 1970.

"Progress of Merit Scholars: Does Religious Background Matter?" D. J. Watley and R. Kaplan. *National Merit Scholarship Research Corporation Reports,* Vol. 6, No. 5, 1970.

1971

"Brain Gains and Brain Drains: The Migration of Black and Nonblack Talent," D. J. Watley. *National Merit Scholarship Corporation Research Reports,* Vol. 7, No. 1, 1971.

"Differential Expectations? Predicting Grades for Black Students in Five Types of Colleges," F. H. Borgen. *National Merit Scholarship Corporation Research Reports.* Vol. 7, No. 2, 1971.

"Predicting Career Choices of Able College Men From Occupational and Basic Interest Scales of the SVIB," F. H. Borgen. *National Merit Scholarship Corporation Reports,* Vol. 7, No. 9, 1971.

1973

Trends in Aptitude of Graduate Students in Science. R. F. Boldt. Princeton, New Jersey: Educational Testing Service, Jan. 1973.

1976

•*Trends in Aptitude of Graduate Students in Science.* R. F. Boldt. Princeton: Educational Testing Service, Dec. 1976. (PB263455/AS)

STUDENTS' VOCATIONAL OR CAREER CHOICES

1968

"Career Decisions of Talented Youth: Trends Over the Past Decade," D. J. Watley and R. C. Nichols. *National Merit Scholarship Corporation Research Reports,* 1968, Vol. 5, No. 1.

"Career Progress of Merit Scholars," D. J. Watley. *National Merit Scholarship Corporation Research Reports,* 1968, Vol. 4, No. 1.

"Paternal Influence on Career Choice," C. E. Werts. *Journal of Counseling Psychology,* 1968, 15: 48-52.

"Stability of Career Choices of Talented Youth," D. J. Watley. *National Merit Scholarship Corporation Research Reports,* 1968, Vol. 4, No. 2.

"Determinants of Changes in Career Plans During College," C. E. Werts and D. J. Watley. *Sociology of Education,* Nov. 1968.

"Career Choices of Talented Youth: Trends 1957 to 1967," D. J. Watley and R. C. Nichols. *Journal of Engineering Education,* 59: 975-78.

1969

"Career or Marriage?: A Longitudinal Study of Able Young Women," D. J. Watley. *National Merit Scholarship Corporation Research Reports,* Vol. 5, No. 7, 1969.

"Career Selection: Turnover Analysis and the Birds of a Feather Theory," D. J. Watley and C. E. Werts. *National Merit Scholarship Corporation Research Reports.* Vol. 5, No. 8, 1969.

The Educational and Vocational Development of College Students, A. W. Astin and R. J. Panos. Washington, D.C.: American Council on Education, 1969.

1973

Scientific and Technical Careers: Factors Influencing Development During the Educational Years. P. R. Rever, Iowa City: The American College Testing Program, July 1973.

1975

"A Survey of Continuing Education Opportunities Available to Nonacademic Scientists, Engineers, and Mathematicians," Elaine H. El-Khawas and Joan L. Kinzer. *Higher Education Panel Reports No. 23.* Washington, D.C. American Council on Education, April 1975.

"Careers in Science: A Project Talent Study," Marion F. Shaycoft. Palo Alto, Calif.: American Institutes for Research, Oct. 1975.

1977

Career Achievements of NSF Graduate Fellows, Awardees of 1952-1972. L. R. Harmon. Washington, D.C.: National Academy of Sciences-National Research Council, June 1977.

Career Achievements of the National Defense Education Act Fellows of 1959-1973. L. R. Harmon. Washington, D.C.: National Academy of Sciences-National Research Council, July 1977.

EDUCATIONAL INSTITUTIONS AND SYSTEMS

1967

State-Space Models of Educational Institutions, M. G. Keeney, H. E. Koenig, and R. Zemach. East Lansing: Division of Engineering Research, Michigan State Univ., Jan. 23, 1967.

"Study of College Environments Using Path Analysis," C. E. Werts. *National Merit Scholarship Corporation Research Reports,* Apr. 1967, Vol. 3, No. 4.

Present Planning for Higher Education, Report No. 1. Denver: The Academy for Educational Development, Inc., July 1967.

University Cost Structure and Behavior, Peter A. Firmin, Seymour S. Goodman, Thomas E. Hendricks, and James J. Linn. New Orleans: Tulane Univ., Aug. 31, 1967.

1968

"Alternative Methods of Describing Characteristics of Colleges and Universities," J. A. Creager and A. W. Astin. *Journal of Educational and Psychological Measurement,* Autumn 1968, Vol. 28, No. 3, 719-734.

"A State-Space Model for Resource Allocation in Higher Education," R. Zemach. *IEEE Transactions on Systems Science and Cybernetics,* July 1968, Vol. SSC-4, No. 2.

"A Systems Model for Management, Planning, and Resource Allocation in Institutions of Higher Education," H. E. Koenig *et al.* East Lansing: Michigan State Univ., Sept. 1968.

1969

Long-Range Planning for Higher Education, Report No. 3. Denver: The Academy for Educational Development, Inc., May 1969.

An Exploratory Study of the Physical Facilities Requirements of Institutions of Higher Learning. E. B. Allen, C. H. Daniel, and D. P. Jones. New York: Rensselaer Polytechnic Institute, Aug. 1969, revised.

"New Research Has Implications for Academic Planning and the Quest for 'Excellence'," A. W. Astin, *College and University Business,* Aug. 1969, pp. 31-33.

Focus on MIS: A Report on the WICHE-ACE Higher Education Management Information Systems Seminar. R. A. Huff, ed. Boulder: Western Interstate Commission for Higher Education, Oct. 1969.

Management Information Systems: Their Development and Use in the Administration of Higher Education. J. Minter and B. Lawrence, ed. Boulder: Western Interstate Commission for Higher Education, Oct. 1969.

"The Institutional Domain of Higher Education: A Characteristics File for Research," *American Council on Education Research Reports,* Vol. 4, No. 6, Nov. 1969.

"The Institutional Domain of Higher Education: A Characteristics File on Research," J. A. Creager. *American Council on Education Research Reports,* Nov. 1969, Vol. 4, No. 8.

1970

The Outputs of Higher Education: Their Identification, Measurement, and Evaluation Boulder: Western Interstate Commission for Higher Education, July 1970.

1972

Elements Related to the Determination of Costs and Benefits of Graduate Education. John H. Powel, Jr., and Robert D. Lamson. Washington, D.C.: The Council of Graduate Schools, Mar. 1972.

The Costs and Benefits of Graduate Education: A Commentary With Recommendations. Joseph L. McCarthy and David R. Deener. Washington, D.C.: The Council of Graduate Schools, Apr. 1972.

1974

*"College and University Facilities: Expectations of Space and Maintenance Needs for Fall 1974," Elaine H. El-Khawas. *Higher Education Panel Reports No. 20.* Washington, D.C.: American Council on Education, Sept. 1974. (PB256035/AS)

*"Compensation Practices for Graduate Research Assistants: A Survey of Selected Doctoral Institutions," Joan L. Kinzer and Elaine H. El-Khawas. *Higher Education Panel Reports No. 21.* Washington, D.C.: American Council on Education, Oct. 1974. (PB256036/AS)

"Faculty Tenure and Contract Systems: 1972 and 1974," Elaine H. El-Khawas and W. Todd Furniss. *Higher Education Panel Reports No. 22.* Washington, D.C.: American Council on Education, Dec. 1974.

GENERAL EDUCATIONAL STUDIES AND ALL OTHER

1967

"Implications of A Program of Research on Student Development in Higher Education," A. W. Astin. *American Council on Education Research Reports,* 1967, Vol. 2, No. 6.

"Attrition Among College Students," Robert J. Panos and A. W. Astin. *American Council on Education Research Reports,* 1967, Vol. 2, No. 4. (Also in *American Educational Research Journal,* Jan. 1968, Vol. 5, No. 9.)

Eleventh Annual Review of Research by the National Merit Scholarship Corporation Research Staff. Evanston: National Merit Scholarship Corporation, Fall 1967.

1968

"The Effect of Feedback Training on Accuracy of Judgment," D. J. Watley. *Journal of Counseling Psychology,* 1968, 15: 167-171.

"Errors in Zygosity Determination and Their Effects on Heritability Indices," J. A. Creager. *Proceedings,* 76th Annual Convention, APA, 1968.

"The Partitioning of Variants in School Effects Studies," C. E. Werts. *American Educational Research Journal,* 1968, Vol. 5, 311-318.

"Preliminary Evaluation of the Undergraduate Research Participation Program of the National Science Foundation," A. W. Astin. *Journal of Educational Research,* 1968, Vol. 62, No. 5, 217-221.

"Reply to McArthur: Lost by Practeritio?" D. J. Watley. *Journal of Counseling Psychology*, 1968, 15: 390-392.

"Use of Research Results in Matching Students and Colleges," J. A. Creager. *Journal of College Student Personnel*. Sept. 1968, 312-319.

"A Program of Research on Student Development," A. W. Astin. *Journal of College Student Personnel*, Sept. 1968, 299-307.

"Criteria of Student Development," R. J. Panos. *Journal of College Student Personnel*, Sept. 1968, 308-311.

"Dropping Out of College: Failure or Fulfillment?" A. W. Astin. *Contemporary Psychology*, Dec. 1968, 13: 637-638.

"General Purpose Sampling in the Domain of Higher Education," J. A. Creager. *American Council on Education Research Reports*, Dec. 1968, Vol. 3, No. 2.

Climate for Creativity, Seventh National Research Conference on Creativity. Dec. 1968.

1969

"ACE Research and the Confidentiality Issue." R. F. Boruch. *Proceedings of the Social Statistics Section, American Statistical Association*, 1969, pp. 412-17.

"Nature and Nurture in Adolescence," R. C. Nichols. *Contributions to the Understanding of Adolescence*, J. S. Adams, ed. Boston: Allyn Bacon Co., 1969.

"Personal and Environmental Determinants of Student Activism," A. W. Astin. *Journal of Measurement and Evaluation in Guidance*, 1969.

"User's Manual—The ACE Higher Education Data Book," A. E. Bayer, A. W. Astin, R. F. Boruch, and J. A. Creager. *American Council on Education Research Reports*, 1969.

"A Data Bank for Research on Higher Education," A. W. Astin. *Planning for Lifetime Learning* (G. R. Larke,). Los Angeles: Univ. of California Research Library, 1965 pp. 19-29.

Maximum Likelihood Factor Analysis: Program Manual. R. F. Boruch. Evanston: Vogelback Computation Center, Northwestern Univ., 1969.

"Orthogonal Analysis of Linear Composite Variance," J. A. Creager and R. F. Boruch. *Proceedings, Seventy-Seventh Annual Convention, American Psychological Association*, 1969, pp. 113-14.

"A Procedure for Estimating the Amount of Trait, Method, and Error Variance Attributable to a Measure," R. F. Boruch. *Dissertation Abstracts*, Vol. 29, No. 9, 1969, p. 3464-B.

"The OSP Doctorate Records File as a Resource of Human Mobility," Lindsey Harmon, paper read at Cornell Conference on Human Mobility. Ithaca: Cornell Univ., 1969.

"A Preliminary Evaluation of Undergraduate Research Participation Program of the National Science Foundation," A. W. Astin. *Journal of Educational Research*, Vol. 62, No. 5, Jan. 1969.

"On Methods for Analysis of Differential Input and Treatment Effects on Educational Outcomes," J. A. Creager, presented at Joint Meetings of AERA and NCM in Education. Los Angeles, Calif., Feb. 1969, 10 pp.

"Recent Findings From the ACE Research Program: Implications for College Choice and Admissions," A. W. Astin. *College and University*. Washington, D.C.: American Association of College Registrars and Admissions Officers, Summer 1969, pp. 341-356.

"Educational Research and the Confidentiality of Data," R. F. Boruch. *American Council on Education Research Reports*, Vol. 4, No. 2, Aug. 1969.

"Fortran Programs Providing Weights in Survey Designs Using Stratified Samples," J. A. Creager. *Educational and Psychological Measurement*, Autumn 1969, pp. 709-712.

"Computer-Based Intraindividuals Measurement Using the Comparative Judgment Method," F. H. Borgen. *Proceedings of the 77th Annual Convention of the American Psychological Association*. Sept. 4, 1969. "The Interpretation of Multiple Regression in Terms of Overlapping Rings," J. A. Creager. *American Educational Research Journal*, Nov. 1969.

1970

"A 'Link' System for Assuring Confidentiality of Research Data in Longitudinal Studies," A. W. Astin and R. F. Boruch. *American Council on Education Research Reports*, Vol. 5, No. 3, 1970.

"On the Allocation of Federal Funds for Science Education," D. E. Drew. *American Council on Education Research Reports*, Vol. 5, No. 7, 1970.

"Review of Research," *National Merit Scholarship Corporation Research Reports*, Vol. 6, No. 1, 1970.

"The Partitioning of Variants in School Effects Studies: A Reconsideration," C. E. Werts. *American Educational Research Journal*. Vol. 7, No. 1, Jan. 1970, p. 127.

Impact of Federal Support of Science on the Publicly Supported Universities and Four-Year Colleges in Michigan. P. L. Dressel and D. R. Come. East Lansing: Michigan State Univ. Press, Apr. 1970.

1971

"Institutional Correlates of Faculty Support of Campus Unrest," A. E. Bayer. *American Council on Education Research Reports*, Vol. 6, No. 1, 1971.

"Evaluation and Selection of Academic Interns: 1967-1968," J. A. Creager. *American Council on Education Research Reports*, Vol. 6, No. 2, 1971.

"Goals and Achievements of the ACE Academic Internship Program," J. A. Creager, *American Council on Education Research Reports*, Vol. 6, No. 3, 1971.

"A Study of the NSF College Science Improvement Program," D. E. Drew. *American Council on Education Research Reports*, Vol. 6, No. 4, 1971.

1972

An Annotated Bibliography of Literature Relating to the Costs and Benefits of Graduate Education. John H. Powel, Jr., and Robert D. Lamson. Washington, D.C.: The Council of Graduate Schools, Mar. 1972.

"Undergraduate Aspirations: A Test of Several Theories," David E. Drew and A. W. Astin. *American Journal of Sociology*, Vol. 77, No. 6, 1972.

"College Impact on Marriage," Alan E. Bayer. *Journal of Marriage and the Family*, Vol. 34, No. 4, 1972.

"Construction of a Race Item for Survey Research," Alan E. Bayer. *Public Opinion Quarterly*, Vol. 36, No. 4, 1972.

"A Note on Stability of Self-Reported Protest Activity and Attitudes," John A. Creager and Robert F. Boruch. *Measurement and Evaluation in Guidance*, Vol. 5, No. 2, 1972.

"Measurement Error in Social and Educational Survey Research," John A. Creager and Robert F. Boruch. *American Council on Education Research Reports*, Vol. 7, No. 2, 1972.

National Science Foundation Program Participation and Secondary School Teaching, 1969. Washington D.C.: Vitro Laboratories and National Science Foundation, Jan. 1972.

1975

"Student Assistance: Participants and Programs, 1974-75," Frank J. Atelsek and Irene J. Gomberg. *American Council on Education-Higher Education Panel Reports*, Survey No. 27, Dec. 1975.

1976

•"Faculty Research: Level of Activity and Choice of Area," Frank J. Atelsek and Irene L. Gomberg. *American Council on Education-Higher Education Panel Reports*, Survey No. 29, Jan. 1976. (PB263017/AS)

•"Health Research Facilities: A Survey of Doctorate-Granting Institutions," Frank J. Atelsek and Irene L. Gomberg. *American Council on Education-Higher Education Panel Reports*, Survey No. 28, Feb. 1976. (PB263016/AS)

•"Major Field Enrollment of Junior-Year Students, 1973 and 1974," Frank J. Atelsek and Irene L. Gomberg. *American Council on Education-Higher Education Panel Reports*, Survey No. 26, Apr. 1976. (PB263069/AS)

1977

"College and University Services for Older Adults," Frank J. Atelsek and Irene L. Gomberg. *Higher Education Panel Reports No. 33*. Washington, D.C.: American Council on Education, Feb. 1977.

"Energy Costs and Energy Conservation Programs in Colleges and Universities: 1972-73 and 1974-75," Frank J. Atelsek and Irene L. Gomberg. *Higher Education Panel Reports No. 31*. Washington, D.C.: American Council on Education, Apr. 1977.

Foreign Studies

Engineering Education in Latin America, Frank Tiller. Houston: Univ. of Houston, 1967.

The Migration of Scientific and Engineering Manpower Resources: A Bibliography, Father William J. Gibbons. New York: Fordham University, 1967.

"Planning, Management, and Economic Development in Communist China," Yuan-li Wu. *An Economic Profile of Mainland China* (Studies prepared for the Joint Economic Report, Congress of the United States, Feb. 1967, Vol. 1).

"Research and Development in Communist China: Mood, Management, and Measurement," Leo A. Orleans. *An Economic Profile of Mainland China* (Studies prepared for the Joint Economic Report, Congress of the United States, Feb. 1967, Vol. 2).

"R&D in Communist China," Leo A. Orleans. *Science*, July 1967.

"Scientific and Engineering Manpower in Communist China," Chu-yuan Cheng. *An Economic Profile of Mainland China* (Studies prepared for the Joint Economic Report, Congress of the United States, Feb. 1967, Vol. 2).

"Scientific and Engineering Manpower Resources of the U.S.S.R.: 1961-1966" by Joseph R. Kozlowski in *Science Policy in the U.S.S.R.*, Part II. Paris: Organisation for Economic Cooperation and Development, 1969.

Reference Source on U.S.S.R. R&D Statistics. Robert W. Campbell. Bloomington, Ind.: Indiana Univ., 1976. (In press)